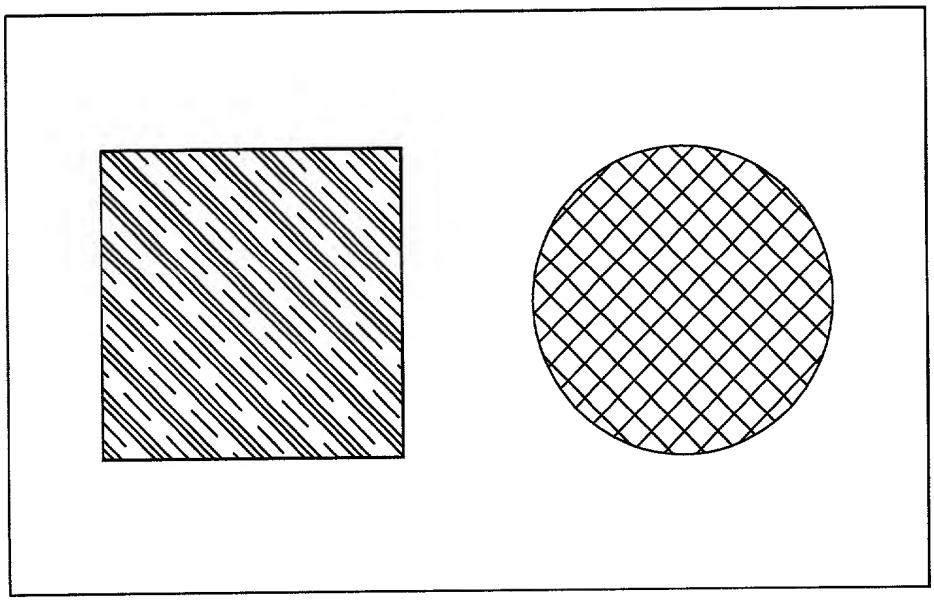

FIG. 1A

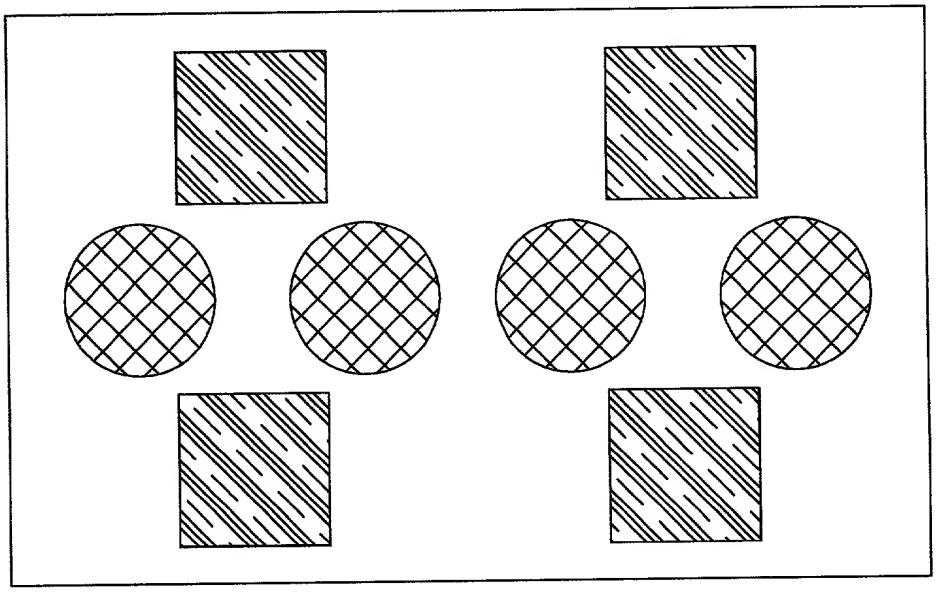

FIG. 1B

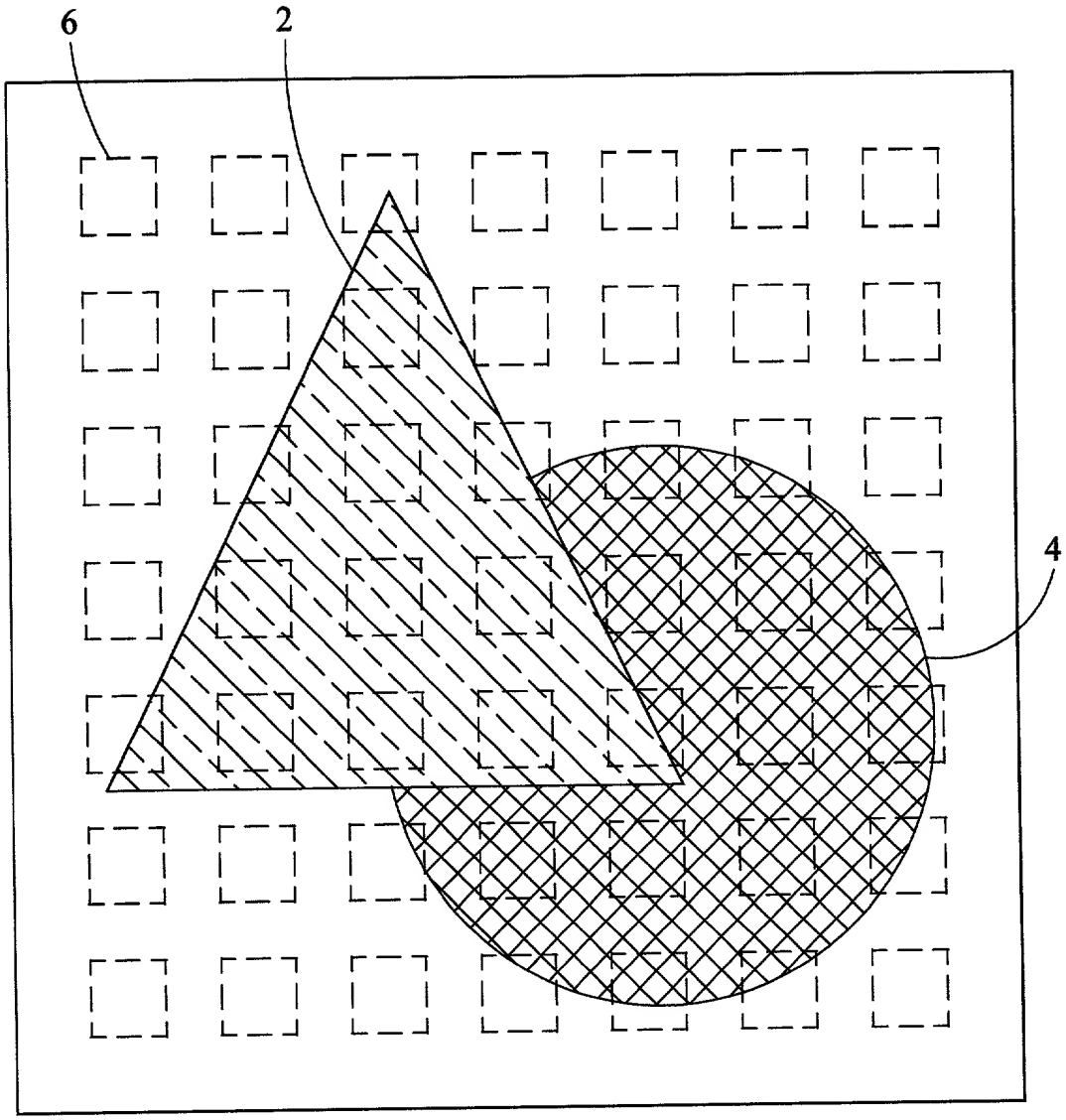

FIG. 2

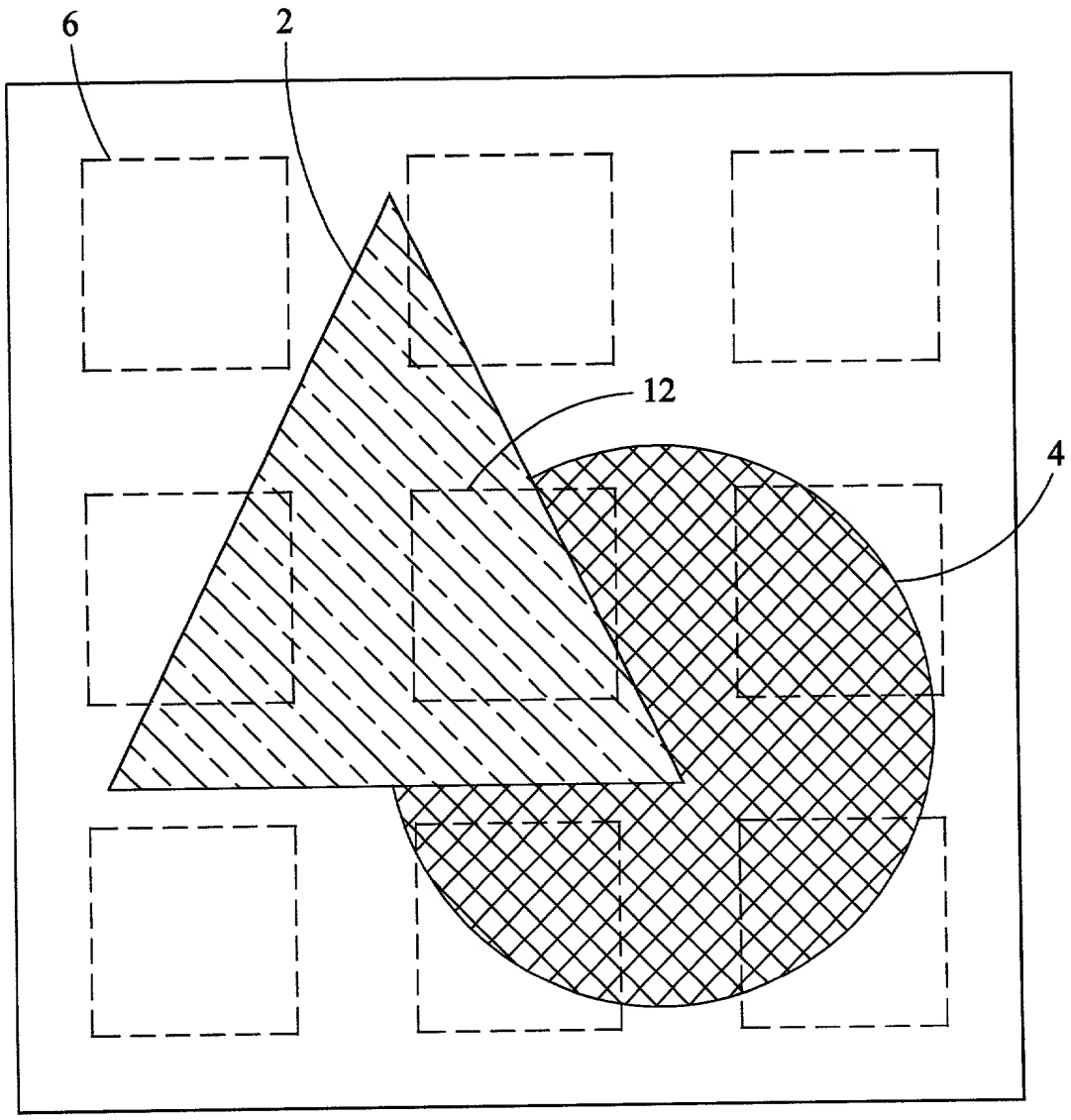

FIG. 3

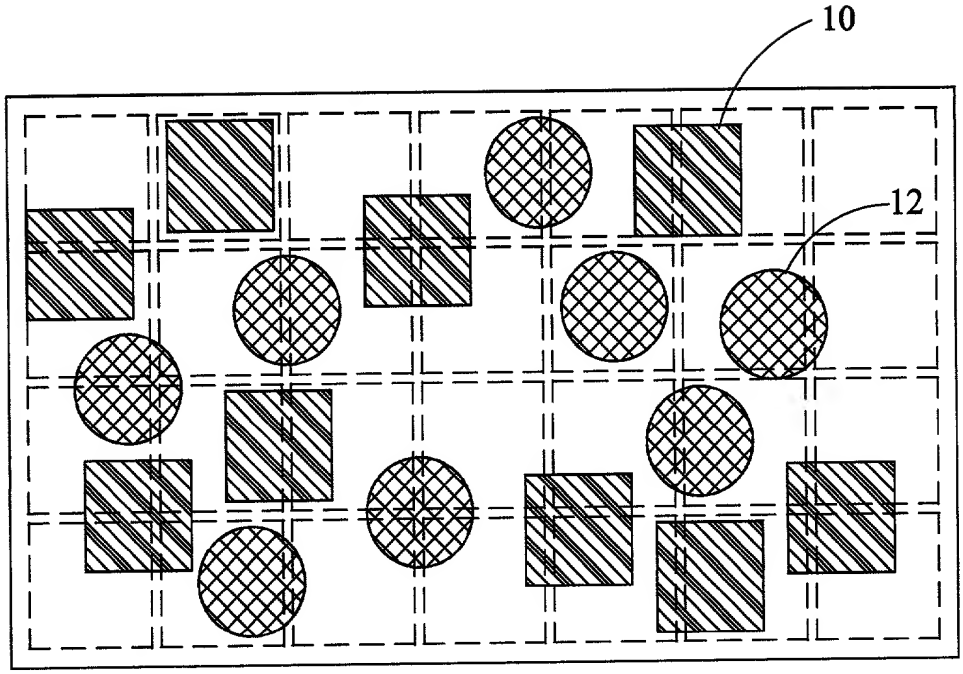

FIG. 4

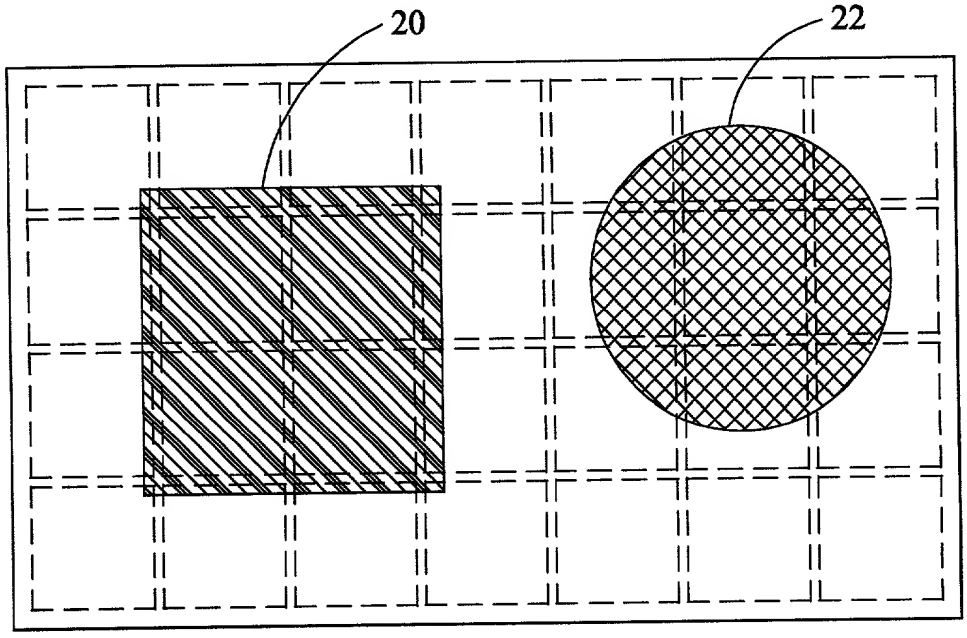

FIG. 5

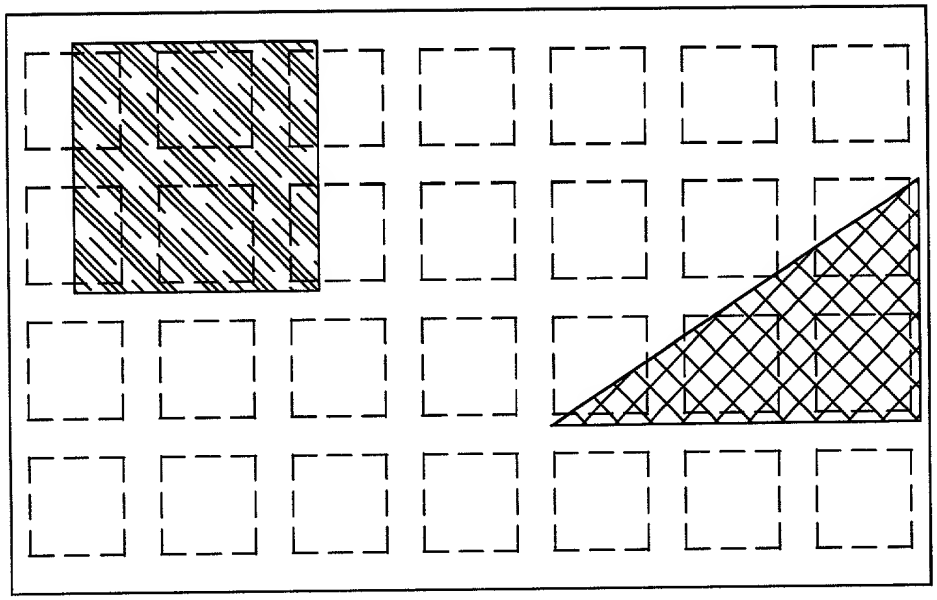

FIG. 6A

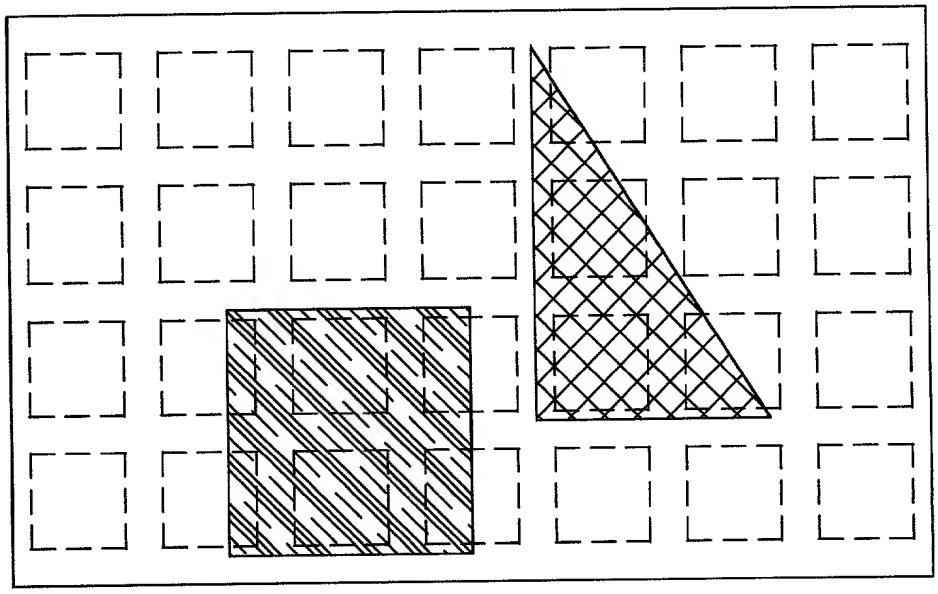

FIG. 6B

	S = X1	S = X2	S = X3
μ_0	0	0	0
μ_1	2	0	2
μ_2	1	4	2
μ_3	6	3	0
μ_4	5	0	0
μ_5	6	2	1
μ_6	3	0	0
μ_7	2	3	2
μ_8	0	1	0
μ_9	1	0	1
μ_{10}	0	0	0

FIG. 7

	0% TO 4%	4% TO 12%	12% TO 26%	26% TO 52%	52% TO 100%
μ_0	0.3	0.1	0.6	1.8	3.0
μ_1	1.5	0.3	0.7	0.9	0.0
μ_2	1.9	4.3	0.0	3.1	2.1
μ_3	0.0	0.0	3.9	2.1	1.7
μ_4	4.5	2.2	0.3	0.0	4.0
μ_5	0.0	0.1	0.0	0.0	0.0
μ_6	9.1	0.0	5.3	0.0	4.3
μ_7	0.0	10.2	9.3	6.7	6.1
μ_8	0.0	4.7	0.0	0.0	1.2
μ_9	0.0	0.0	0.3	0.1	0.0
μ_{10}	2.2	3.2	1.7	0.0	5.2

FIG. 8

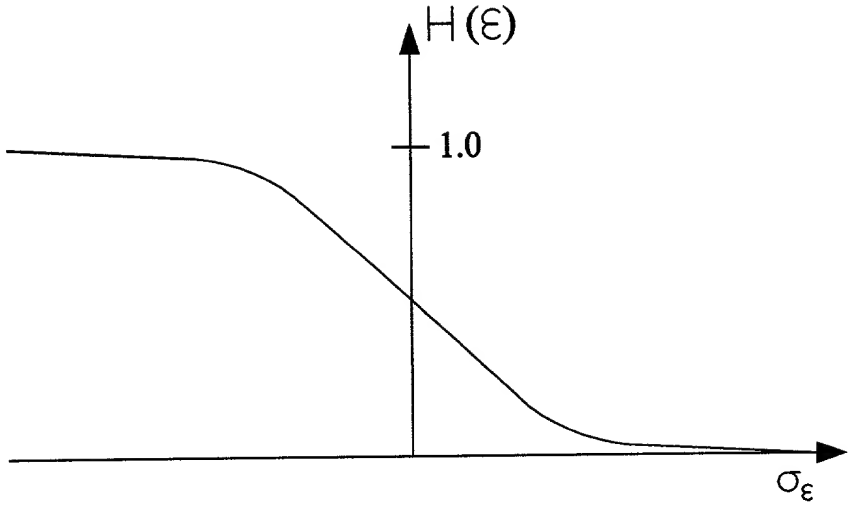

FIG. 9

	0% TO 4%	4% TO 12%	12% TO 26%	26% TO 52%	52% TO 100%
μ_0	0.3	0.1	0.6	1.8	3.0
μ_1	1.5	0.3	0.7	0.9	0.0
μ_2	1.9	4.3	0.0	3.1	2.1
μ_3	0.0	0.0	3.9	2.1	1.7
μ_4	4.5	2.2	0.3	0.0	4.0
μ_5	0.0	0.1	0.0	0.0	0.0
μ_6	9.1	0.0	5.3	0.0	4.3
μ_7	0.0	10.2	9.3	6.7	6.1
μ_8	0.0	4.7	0.0	0.0	1.2
μ_9	0.0	0.0	0.3	0.1	0.0
μ_{10}	2.2	3.2	1.7	0.0	5.2

FIG. 10

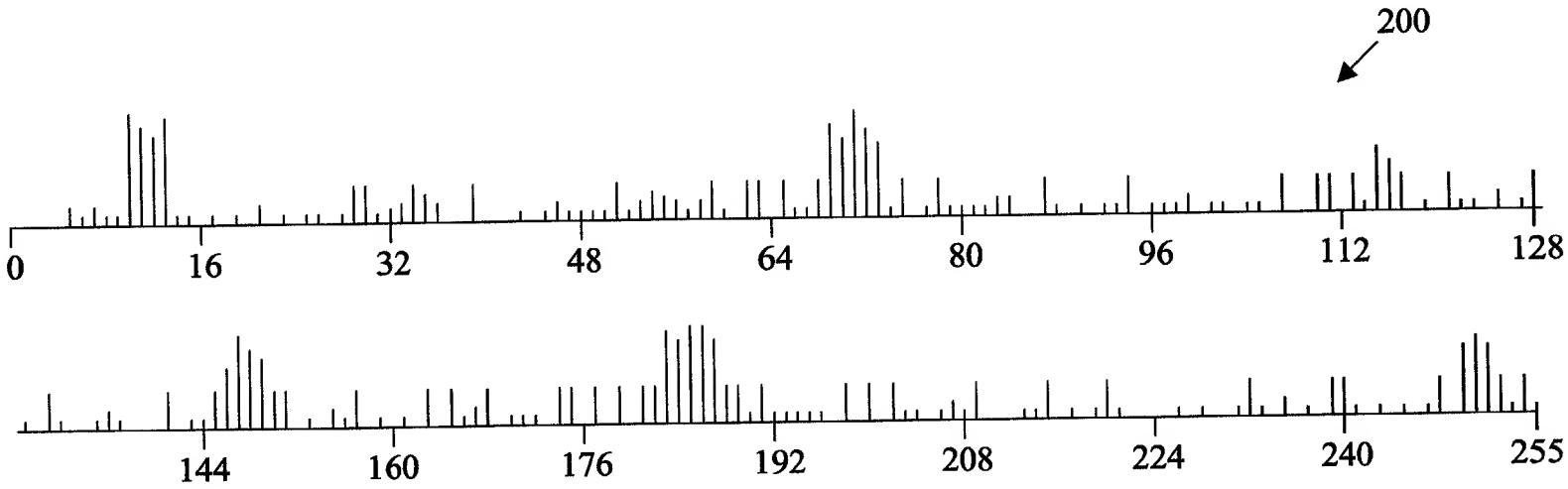

FIG. 11

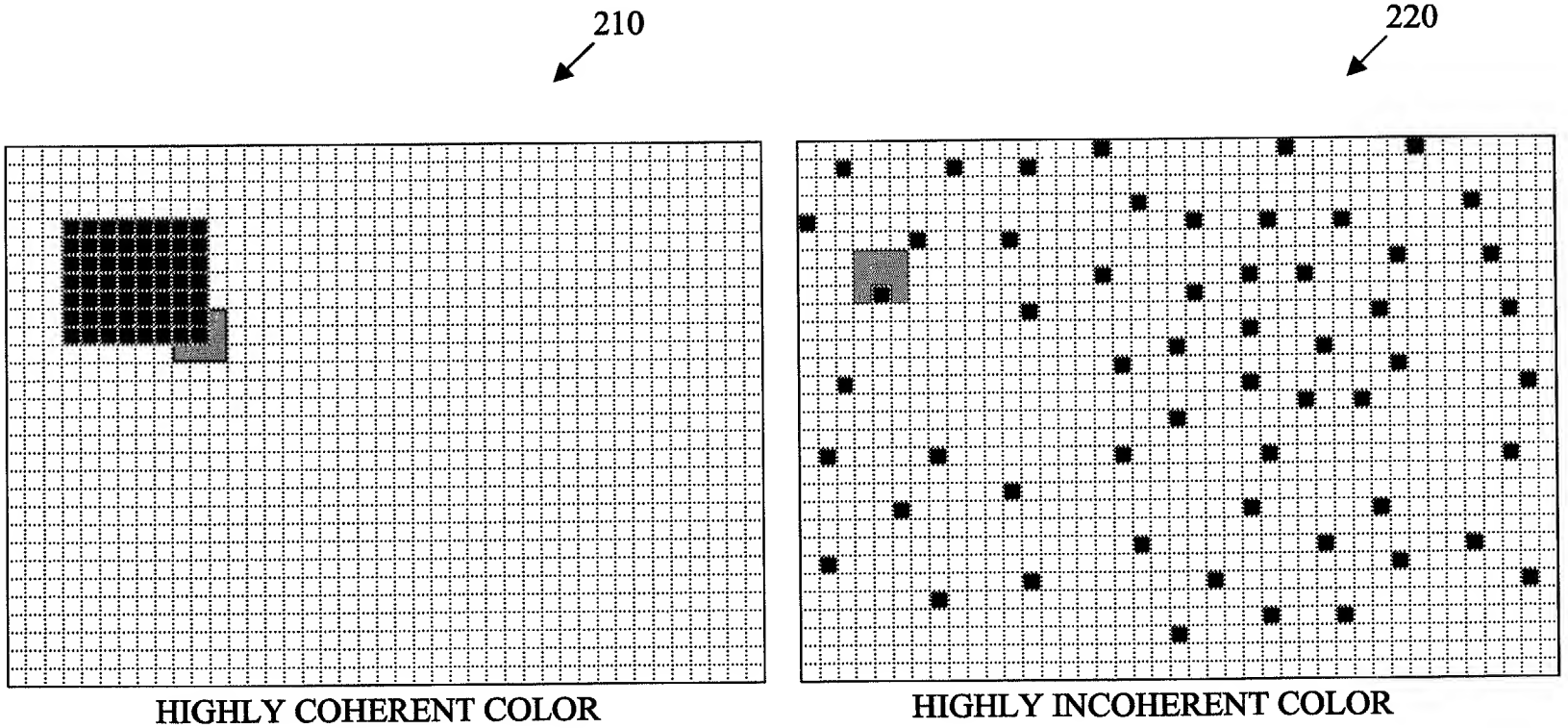

FIG. 12A

FIG. 12B

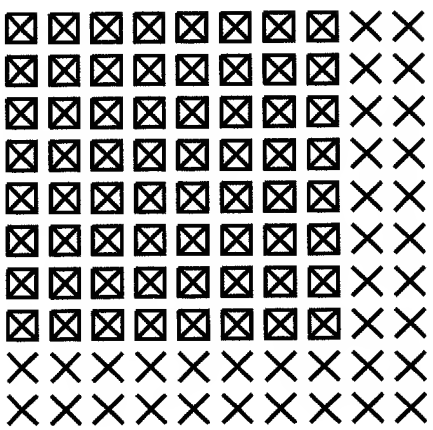

FIG. 13A

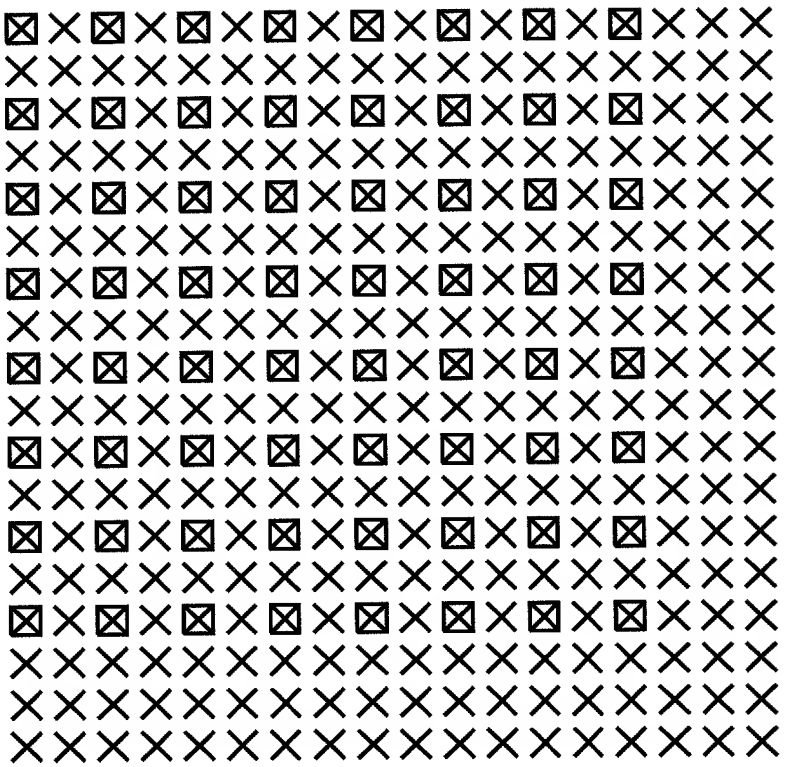

FIG. 13B

Structuring elements for images with different resolutions; the image in FIG. 13A is 320x240 and the image in FIG. 13B is 640x480 (only part of the image samples are shown). The diagram shows the structuring element in the initial location at the upper left corner of the image. The structuring element slides over the image and is shifted by 1 pixel in FIG. 13A and by 2 pixels in FIG. 13B. FIG. 13B corresponds to subsampling of the image by 2 in both directions and subsequently applying the same 8x8 structuring element.

Color space quantization "A"

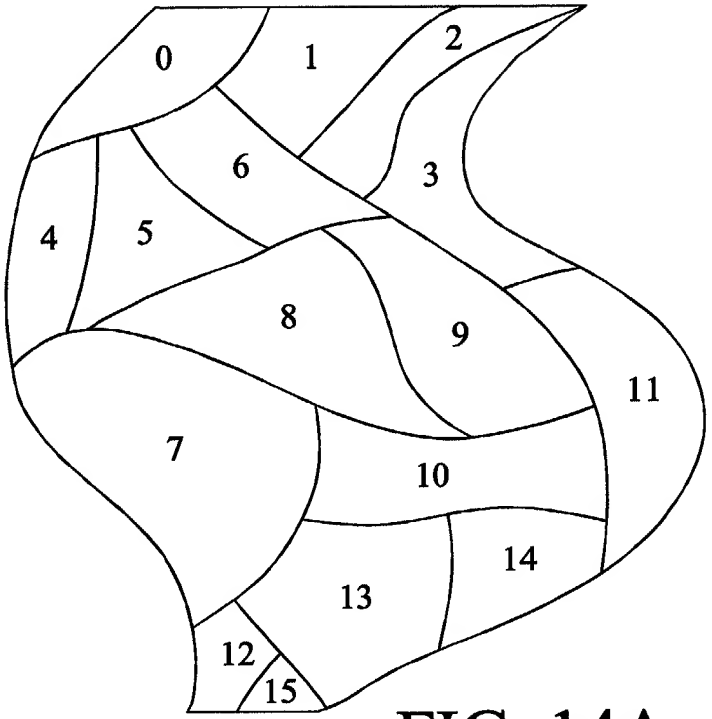

FIG. 14A

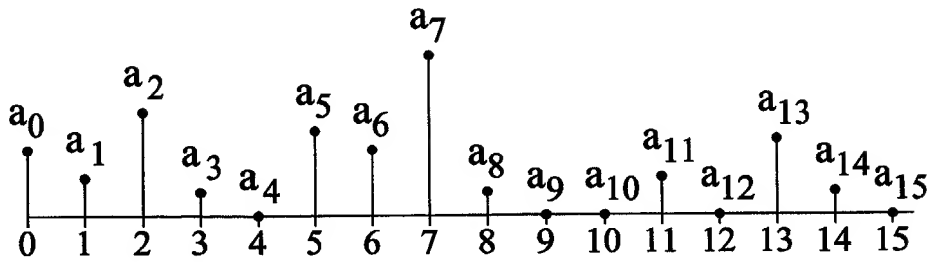

FIG. 14B

Color space quantization "B"

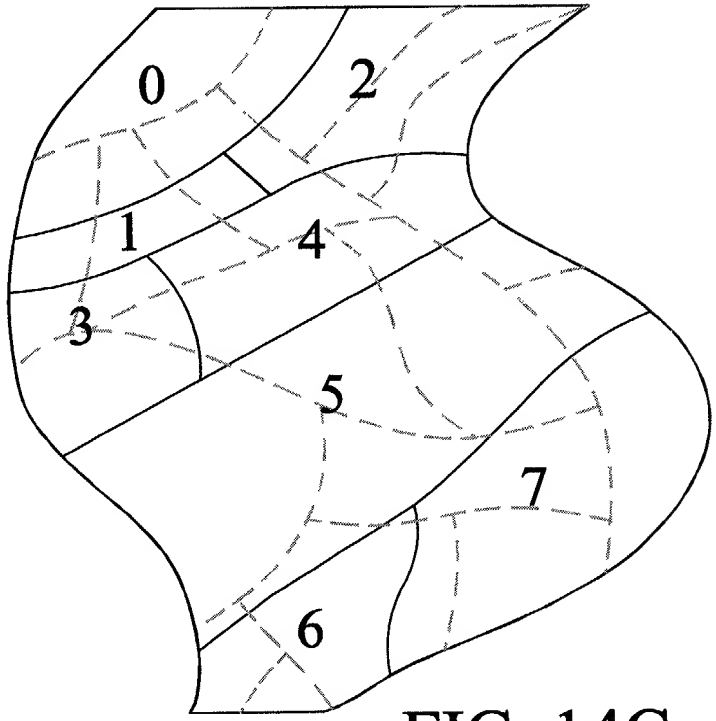

FIG. 14C

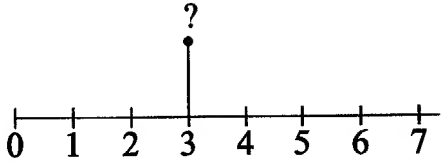

FIG. 14D

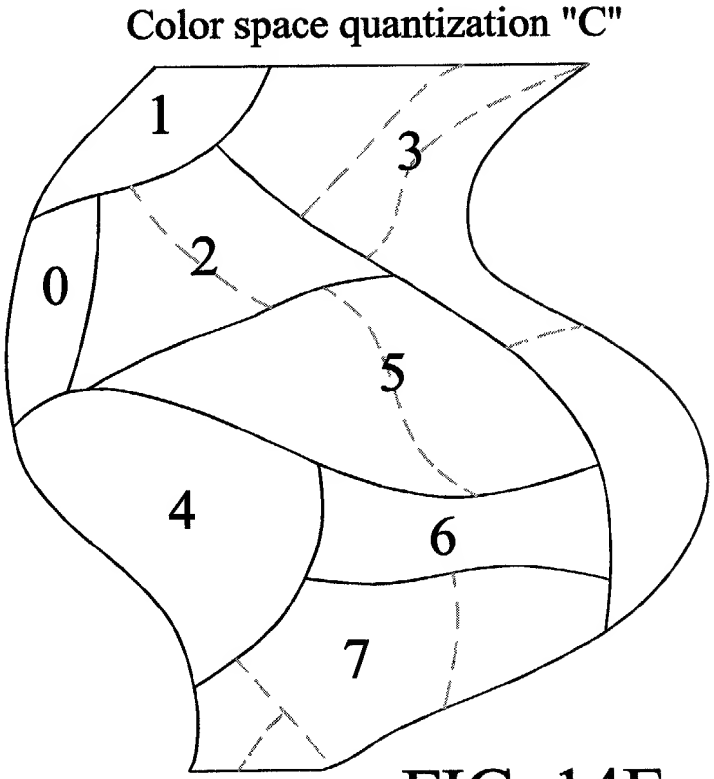

FIG. 14E

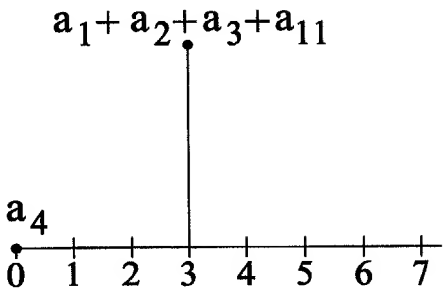

FIG. 14F

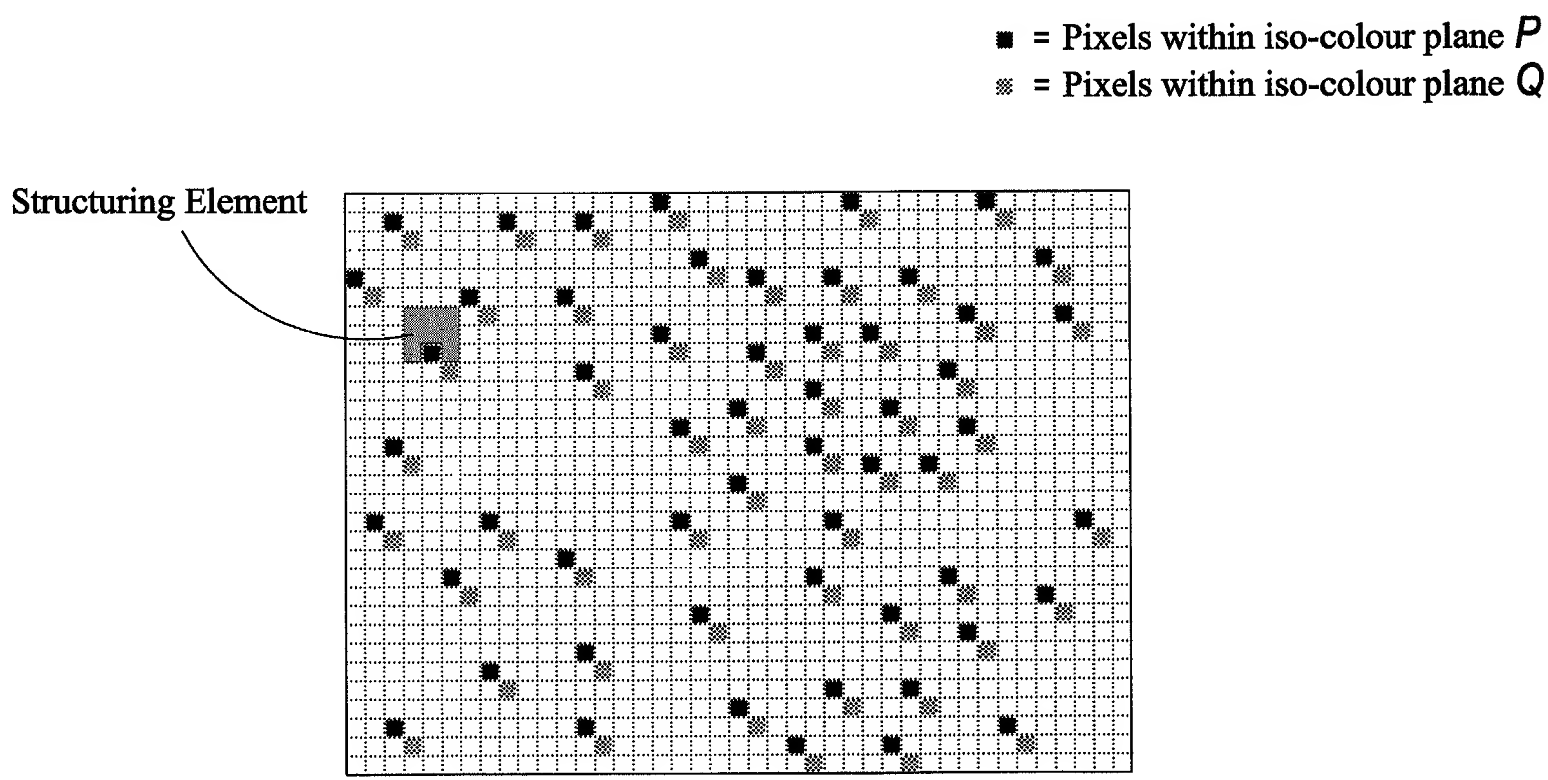
■ = Pixels within iso-colour plane P
▩ = Pixels within iso-colour plane Q
Structuring Element

FIG. 15

■ = Pixels within iso-colour plane PQ

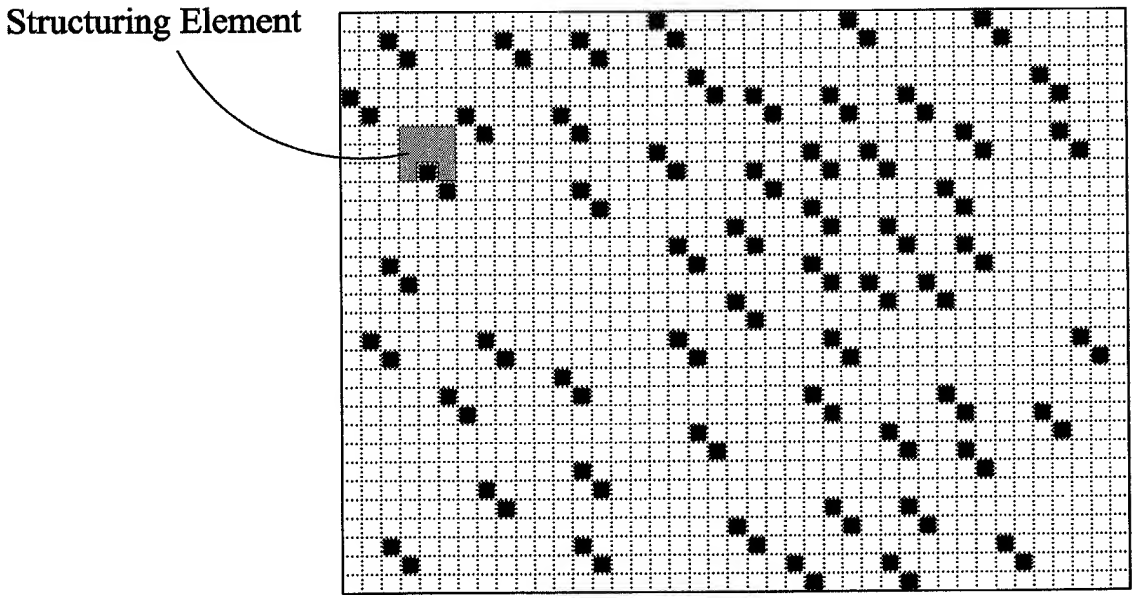

FIG. 16

colorQuant	number of values
000	forbidden
001	32 (HMMD)
010	64 (HMMD)
011	128 (HMMD)
100	256 (HMMD)
101-111	reserved

FIG. 17

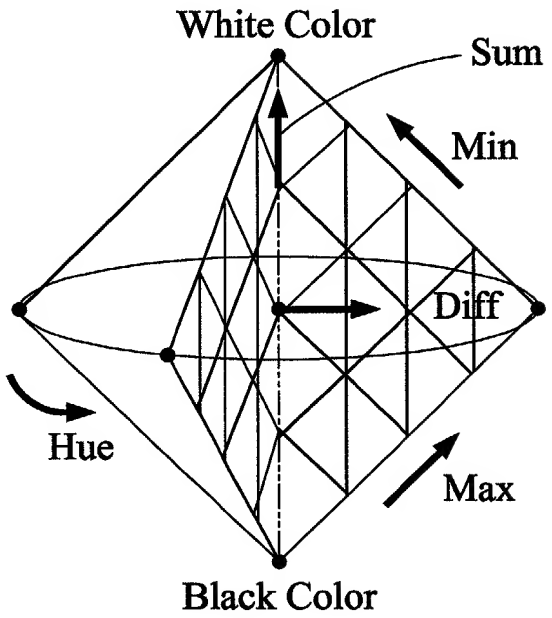

FIG. 18

ColorSpaceType	Component1	Component2	Component3	Component4	Component5
RGB	R	G	B	N/A	N/A
YCbCr	Y	Cb	Cr	N/A	N/A
HSV	H	S	V	N/A	N/A
HMMD	Hue	Max	Min	Diff	Sum
LinearMatrix	C1	C2	C3	N/A	N/A
Monochrome	Y	N/A	N/A	N/A	N/A

FIG. 19

Meaning	**ColorSpaceType**
RGB	000
YCbCr	001
HSV	010
HMMD	011
LinearMatrix	100
Monochrome	101
Reserved	110-1111

FIG. 20

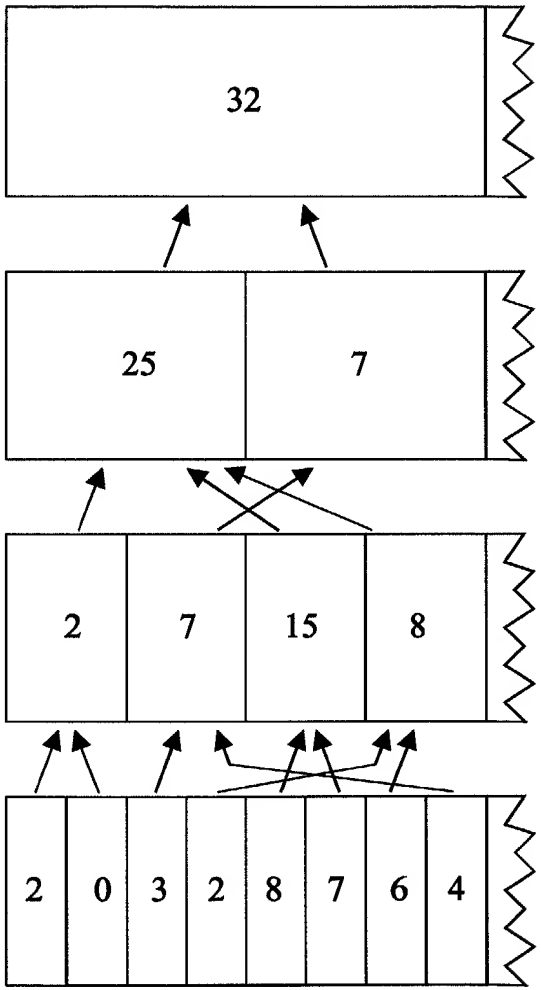
32
25
7
2
7
15
8
2
0
3
2
8
7
6
4

FIG. 21

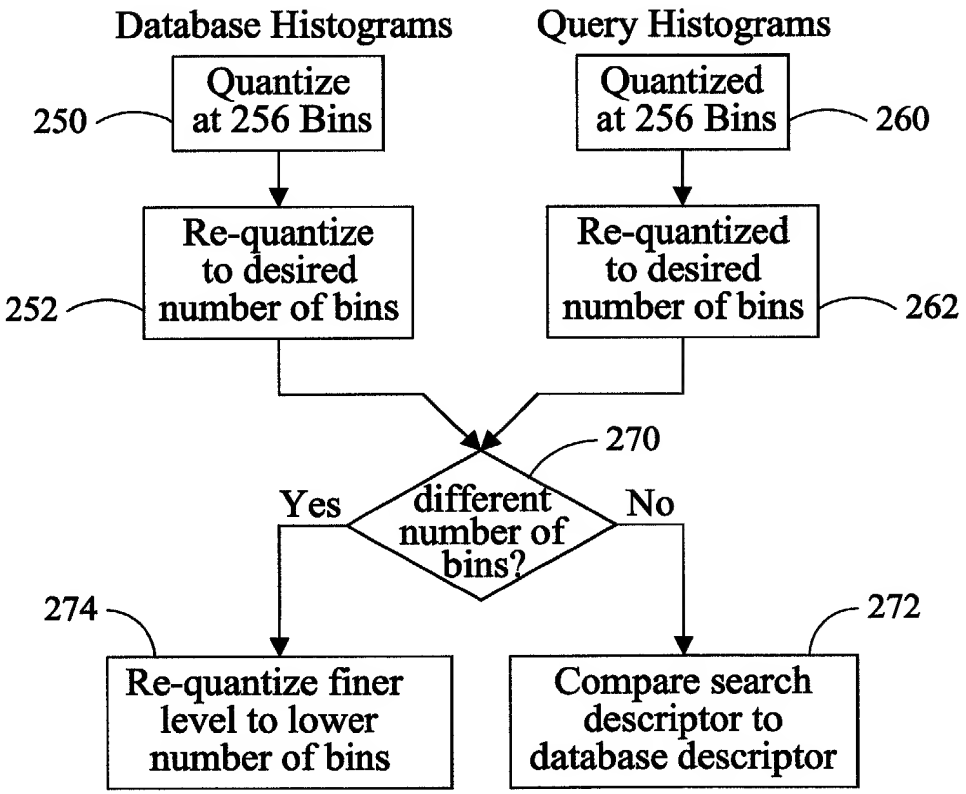
Database Histograms
Query Histograms
Quantize at 256 Bins
250
Quantized at 256 Bins
260
Re-quantize to desired number of bins
252
Re-quantized to desired number of bins
262
270
different number of bins?
Yes
No
274
Re-quantize finer level to lower number of bins
272
Compare search descriptor to database descriptor

FIG. 22

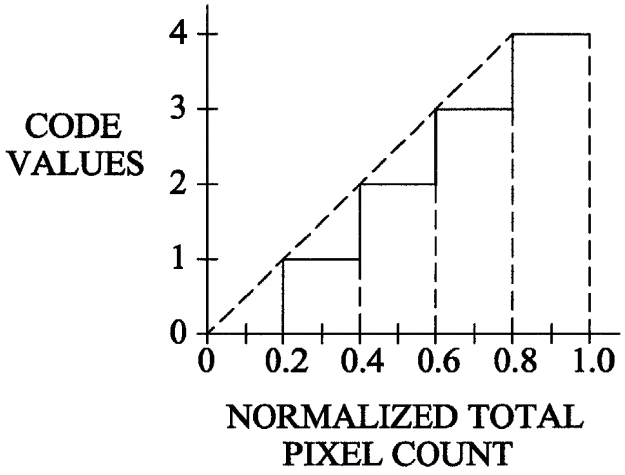

FIG. 23

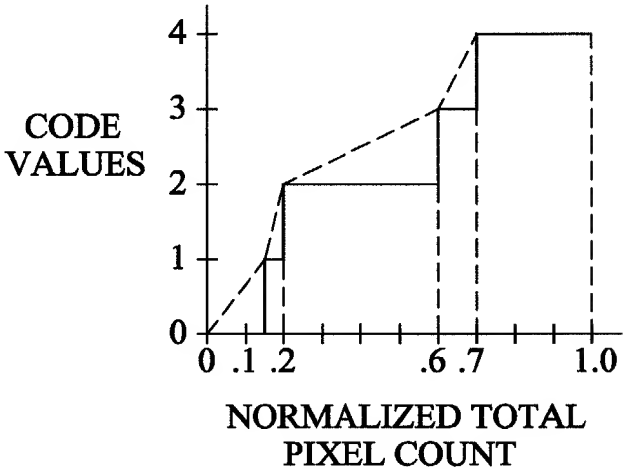

FIG. 24

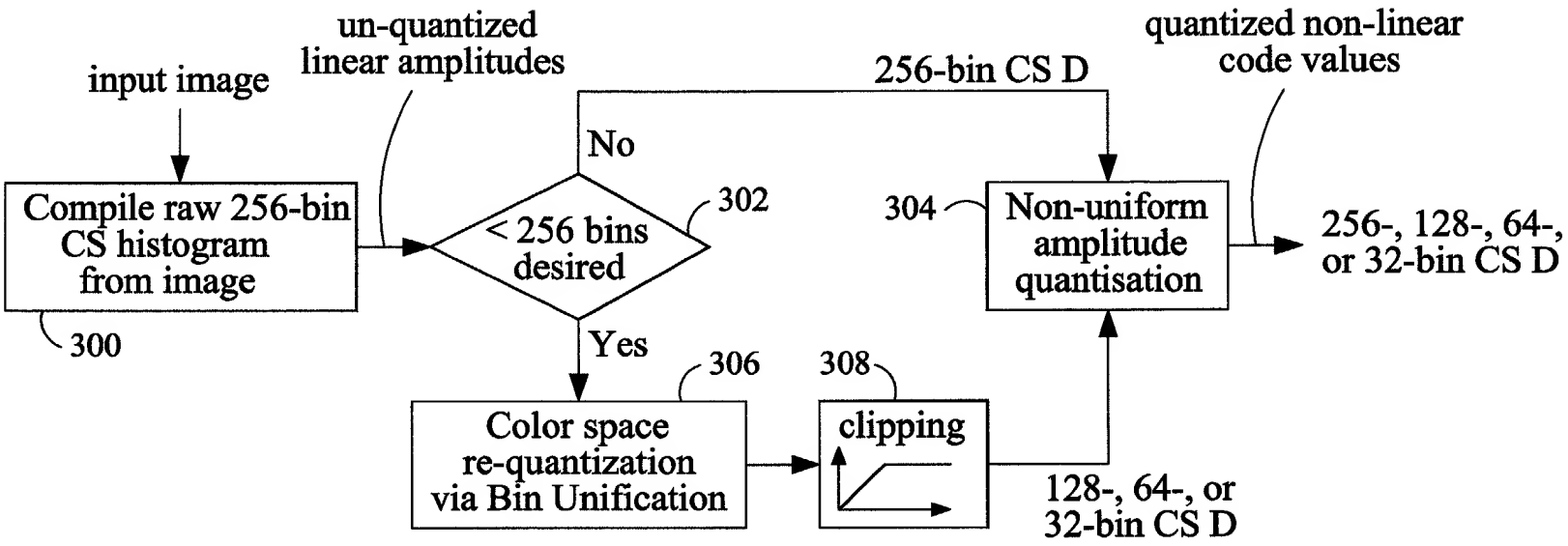
input image
un-quantized linear amplitudes
256-bin CS D
quantized non-linear code values
No
Compile raw 256-bin CS histogram from image
< 256 bins desired
302
304
Non-uniform amplitude quantisation
256-, 128-, 64-, or 32-bin CS D
300
Yes
306
308
Color space re-quantization via Bin Unification
clipping
128-, 64-, or 32-bin CS D

FIG. 25

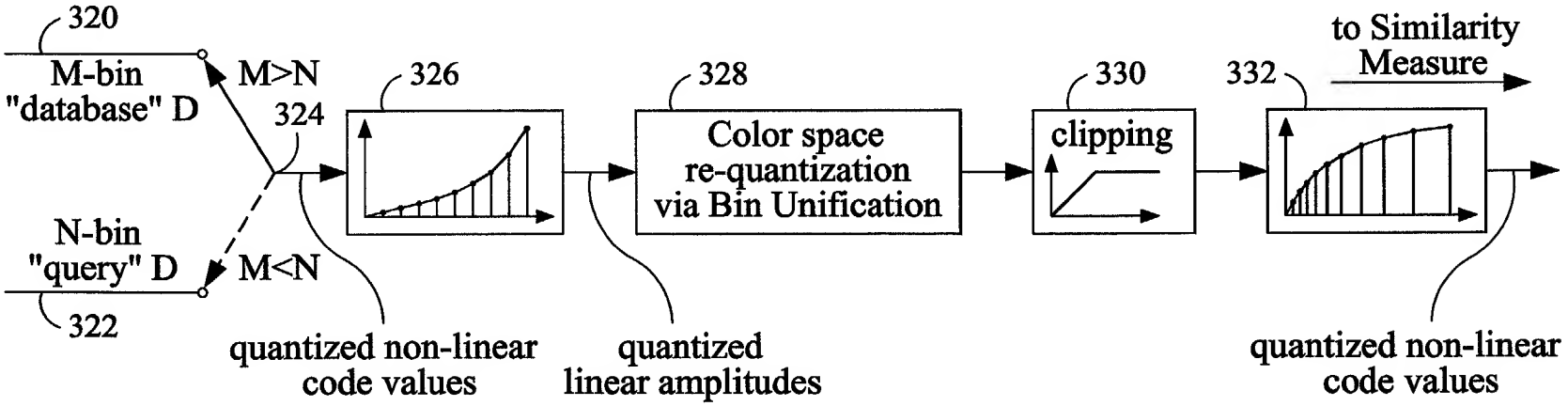
320
M-bin "database" D
M>N
324
326
328
330
332
to Similarity Measure
Color space re-quantization via Bin Unification
clipping
N-bin "query" D
M<N
322
quantized non-linear code values
quantized linear amplitudes
quantized non-linear code values

FIG. 26

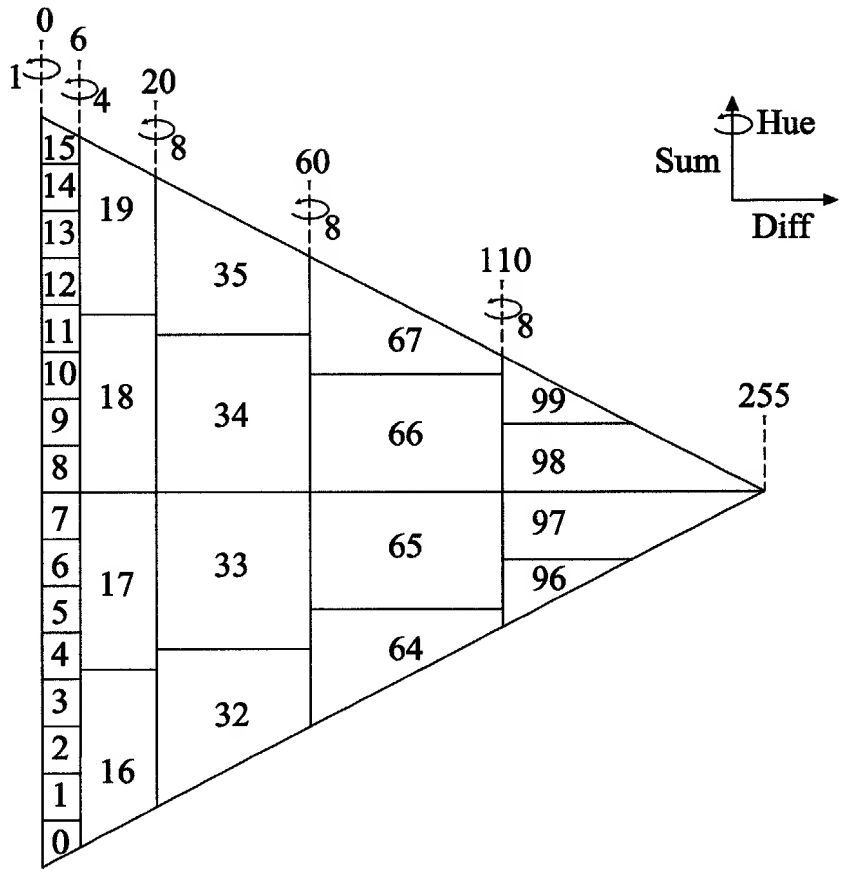
0
6
1
4
20
8
60
8
110
8
255
Hue
Sum
Diff
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
19
18
17
16
35
34
33
32
67
66
65
64
99
98
97
96

FIG. 27